

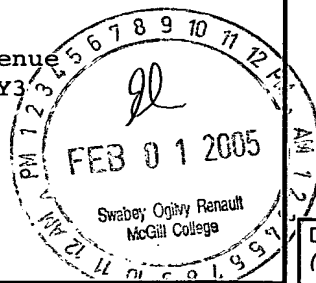
# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

OGILVY RENAULT  
Suite 1600  
1981 McGill College Avenue  
Montreal, Quebec H3A 2Y3  
CANADA



NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

**AMENDMENT ART. 19**

~~DUE ON MAR 31 2005~~

man. 14/05 (PCT Rule 44.1)

Date of mailing  
(day/month/year) 31/01/2005

Applicant's or agent's file reference

10662-121PCT CC

**FOR FURTHER ACTION**

See paragraphs 1 and 4 below

International application No.

PCT/CA2004/000907

International filing date  
(day/month/year)

18/06/2004

Applicant

UNIVERSITE DE MONTREAL

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Barbara Klaver

*BK*

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

**The amendments must be made in the language in which the international application is to be published.**

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

**The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.**

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

**The following examples illustrate the manner in which amendments must be explained in the accompanying letter:**

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

**It must be in the language in which the international application is to be published.**

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### **Consequence if a demand for international preliminary examination has already been filed**

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1bis(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43bis.1(c)).

### **Consequence with regard to translation of the international application for entry into the national phase**

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>10662-121PCT</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. <b>PCT/CA2004/000907</b>	International filing date (day/month/year) <b>18/06/2004</b>	(Earliest) Priority Date (day/month/year) <b>20/06/2003</b>
Applicant  <b>UNIVERSITE DE MONTREAL</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☒ **Unity of invention is lacking** (see Box III).

**4. With regard to the title,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regard to the drawings,**

- a. the figure of the **drawings** to be published with the abstract is Figure No. \_\_\_\_\_

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☒ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2004/000907

## Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

☒

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☒

in written format

☒

in computer readable form

c. time of filing/furnishing

☒

contained in the international application as filed

☒

filed together with the international application in computer readable form

☐

furnished subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/000907

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-43

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-43

mutants of proteins having the sequences SEQ ID NOs: 1 to 4,  
uses thereof,  
methods to increase pathogen resistance using the wildtype  
proteins having the sequences SEQ ID NOs: 1 to 4  
---

2. claims: 44-46

methods to increase pathogen resistance using pathogenesis  
related (PR) genes  
---

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C12N15/82 C07K14/415 A01H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE, Sequence Search, EMBL

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	DESVEAUX DARRELL ET AL: "A "whirly" transcription factor is required for salicylic acid-dependent disease resistance in Arabidopsis" DEVELOPMENTAL CELL, vol. 6, no. 2, February 2004 (2004-02), pages 229-240, XP002300472 ISSN: 1534-5807 the whole document	1-43
A	DESVEAUX DARRELL ET AL: "A new family of plant transcription factors displays a novel ssDNA-binding surface" NATURE STRUCTURAL BIOLOGY, vol. 9, no. 7, July 2002 (2002-07), pages 512-517, XP002300473 ISSN: 1072-8368 the whole document ----- -/-	1-43

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## ° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

14 October 2004

Date of mailing of the international search report

31 01 2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Bucka, A



## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DESVEAUX D ET AL: "PBF-2 is a novel single-stranded DNA binding factor implicated in PR-10a gene activation in potato"</p> <p>PLANT CELL, AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS, ROCKVILLE, MD, US, vol. 12, no. 8, August 2000 (2000-08), pages 1477-1489, XP002243940</p> <p>ISSN: 1040-4651</p> <p>the whole document</p>	1-43
A	<p>-----</p> <p>FAGOAGA CARMEN ET AL: "Increased tolerance to Phytophthora citrophthora in transgenic orange plants constitutively expressing a tomato pathogenesis related protein PR-5"</p> <p>MOLECULAR BREEDING, vol. 7, no. 2, 2001, pages 175-185, XP002300475</p> <p>ISSN: 1380-3743</p> <p>the whole document</p>	
A	<p>-----</p> <p>WO 01/29074 A (DANIEL XAVIER ; ROBY DOMINIQUE (FR); CENTRE NAT RECH SCIENT (FR); LACO) 26 April 2001 (2001-04-26)</p> <p>the whole document</p>	
A	<p>-----</p> <p>SINGH KARAM B ET AL: "Transcription factors in plant defense and stress responses"</p> <p>CURRENT OPINION IN PLANT BIOLOGY, vol. 5, no. 5, October 2002 (2002-10), pages 430-436, XP002300503</p> <p>ISSN: 1369-5266</p> <p>page 431, right-hand column</p> <p>page 433, right-hand column - page 434, left-hand column</p>	
A	<p>-----</p> <p>ANAND AJITH ET AL: "Greenhouse and field testing of transgenic wheat plants stably expressing genes for thaumatin-like protein, chitinase and glucanase against Fusarium graminearum."</p> <p>JOURNAL OF EXPERIMENTAL BOTANY, vol. 54, no. 384, March 2003 (2003-03), pages 1101-1111, XP002300474</p> <p>ISSN: 0022-0957</p> <p>the whole document</p> <p>-----</p>	
	<p>-----</p> <p>-/--</p>	

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DATABASE EMBL 11 January 2001 (2001-01-11), YAMADA K ET AL.: "Arabidopsis thaliana putative DNA-binding protein p24 (At1g14410) mRNA, complete cds." XP002300678 Database accession no. AF332452 the whole document</p> <p>-----</p>	1-43
A	<p>DATABASE EMBL 5 July 2002 (2002-07-05), YAMADA K ET AL.: "Arabidopsis thaliana unknown protein (At1g71260) mRNA, complete cds." XP002300679 Database accession no. AY122961 the whole document</p> <p>-----</p>	1-43

Form PCT/ISA/210 (patent family annex) (January 2004)

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

REPLY TO:  
~~WRITTEN OPINION~~ OF THE  
INTERNATIONAL SEARCHING AUTHORITY

am. 30/05 (PCT Rule 43bis.1)  
DUE ON APR. 30 2005 fj

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/CA2004/000907

International filing date (day/month/year)  
18.06.2004

Priority date (day/month/year)  
20.06.2003

International Patent Classification (IPC) or both national classification and IPC  
C12N15/82, C07K14/415, A01H5/00

Applicant  
UNIVERSITE DE MONTREAL

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability.
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, 30 APR 2005 whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Bucka, A

Telephone No. +31 70 340-2279



---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☒ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☒ in written format  
☒ in computer readable form
  - c. time of filing/furnishing:  
☒ contained in the international application as filed.  
☒ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/CA2004/000907

---

**Box No. II    Priority**

---

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 44-46

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 44-46
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
  - the written form ☐ has not been furnished
  - ☐ does not comply with the standard
  - the computer readable form ☐ has not been furnished
  - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

---

**Box No. IV Lack of unity of invention**

---

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-43

---

**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, Inventive step or Industrial applicability; citations and explanations supporting such statement**

---

1. Statement
- |                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 1-43 |
|                               | No: Claims  |      |
| Inventive step (IS)           | Yes: Claims | 1-43 |
|                               | No: Claims  |      |
| Industrial applicability (IA) | Yes: Claims | 1-43 |
|                               | No: Claims  |      |
2. Citations and explanations
- see separate sheet**



---

**Box No. VI    Certain documents cited**

---

1. Certain published documents (Rules 43*bis*.1 and 70.10)  
and /or
2. Non-written disclosures (Rules 43*bis*.1 and 70.9)  
**see form 210**

---

**Box No. VIII    Certain observations on the international application**

---

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

The following documents are referred to in this communication:

- D1: DESVEAUX DARRELL ET AL: "A new family of plant transcription factors displays a novel ssDNA-binding surface" NATURE STRUCTURAL BIOLOGY, vol. 9, no. 7, July 2002, pages 512-517, XP002300473
- D2: DESVEAUX D ET AL: "PBF-2 is a novel single-stranded DNA binding factor implicated in PR-10a gene activation in potato" PLANT CELL, AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS, vol. 12, no. 8, August 2000, pages 1477-1489, XP002243940
- D3: FAGOAGA CARMEN ET AL: "Increased tolerance to Phytophthora citrophthora in transgenic orange plants constitutively expressing a tomato pathogenesis related protein PR-5" MOLECULAR BREEDING, vol. 7, no. 2, 2001, pages 175-185, XP002300475
- D4: WO 01/29074 A (DANIEL XAVIER ; ROBY DOMINIQUE (FR); CENTRE NAT RECH SCIENT (FR); LACO) 26 April 2001
- D5: SINGH KARAM B ET AL: "Transcription factors in plant defense and stress responses" CURRENT OPINION IN PLANT BIOLOGY, vol. 5, no. 5, October 2002, pages 430-436, XP002300503

**Re Item IV**

**Lack of unity of invention**

The following separate inventions/groups of inventions have been identified:

**I. claims 1-43**

mutants of proteins having the sequences SEQ ID NOs: 1 to 4, uses thereof, methods to increase pathogen resistance using the wildtype proteins having the sequences SEQ ID NOs: 1 to 4

**II. claims 44-46**

methods to increase pathogen resistance using pathogenesis related (PR) genes

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the reasons outlined below.

Documents D3, D4 and D5 disclose several approaches to improve the resistance of plants to pathogens, either by expression of transcription factors (D4, D5) or by expression of so-called PR genes (D3).

In the light of these prior art documents D3, D4 and D5, the problem underlying the present application is to provide further approaches to improve the resistance of plants to pathogens and further proteins useful in these approaches, respectively.

The present application offers 2 solutions to this problem, as outlined in more detail above.

The single general concept covering all separate inventions is, according to the description, page 1, first paragraph, the notion that all the provided proteins are useful in approaches to improve the resistance of plants to pathogens.

This concept is known in the state of the art. As described in documents D3, D4 and D5, transcription factors (D4, D5) or the so-called PR genes (D3) have been employed to improve the resistance of plants to pathogens.

This takes away the linking concept possibly unifying the groups of inventions claimed in the present application.

As the single general concept is not novel, it cannot be the single general inventive concept required to be present by Article 3(4)(iii) and Rule 13.1 PCT. When considering the whole set of claims in the light of the description, no further technical features could be identified, which could serve as same or corresponding technical features in the sense of Rule 13.2 PCT to restore unity of invention.

As prescribed in Article 17(3)(a) PCT, the invention first mentioned in the claims (subject 1, claims 1-43) has been the subject of the search. The subject 2 is not linked by a general inventive concept with subject 1 and searching said subject 2 requires a major search effort.

#### **Re Item V**

#### **Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Document D5, which is considered to represent the most relevant state of the art, discloses as one possible approach to improve the resistance of plants to pathogens the increased expression of transcription factors involved in biotic stress responses (D5, pages 431, 433), from which the subject-matter of claim 1 differs in that different transcription factors and their mutants are used in methods

to modify plant responses to pathogens.

The problem to be solved by the present invention may therefore be regarded as the provision of a further approach to improve the resistance of plants to pathogen attacks.

The solution proposed in claim 1 of the present application consists of the provision of mutants of the Whirly transcription factors. Further embodiments concern the use of these mutants and of wildtype Whirly transcription factors to influence pathogen responses.

Although the Whirly transcription factors and some mutants thereof have been described in the prior art (D1, figure 4; D2), there has been no indication or suggestion in the prior art that the mutants described in the present application can be used to influence the responses of plants to biotic stresses.

The solution proposed in **claim 1** of the present application is considered as involving an inventive step (Article 33(3) PCT) for the reasons discussed above.

The same applies *mutatis mutandis* to the subject matter of **claims 2 to 43**.

#### **Re Item VI**

##### **Certain documents cited**

DESVEAUX DARRELL ET AL: "A "whirly" transcription factor is required for salicylic acid-dependent disease resistance in Arabidopsis"

DEVELOPMENTAL CELL, vol. 6, no. 2, February 2004, pages 229-240,  
XP002300472

#### **Re Item VIII**

##### **Certain observations on the international application**

- 1 **The claims** lack clarity (Article 6 PCT), since they refer repeatedly to the amino acids Glu271, Trp272, Pro123, Pro 125, Gly128, which are allegedly found in the sequences SEQ ID NO: 1, 2, 3 and 4, respectively. However, by way of example, SEQ ID NO: 1 does not contain Pro123 or Pro125, none of the sequences SEQ ID NO: 2, 3 and 4 contains Glu271, Trp272, or Pro123.

In addition, it should be made unambiguously clear in the claims that the mutations recited in the claims (e. g. claim 1) are present in all peptides having the sequences SEQ ID NO: 1, 2, 3 and 4, respectively. The present wording of claim 1 seems to imply that these mutations are only present in the peptide having SEQ

ID NO: 4.

- 2 The wording of **claims 1, 2 and 43**, directed to an "active fragment", an "active variant", an "ortholog" and "homolog", respectively, does not allow to define precisely the claimed peptide (Article 5 PCT).  
Homology, as opposed to identity, is defined as similarity or a likeness in structure, but not necessarily in function. Therefore, any protein with "a *likeness* in structure" might not have the same function as the disclosed mutants and therefore not even solve the problem. The common scientific use of the term "ortholog" likewise does not imply the same function, i. e. the same technical effect. The same is true for fragments or variants.
- 3 **Claim 30** lacks clarity and essential technical features, since it does not disclose, how the desired technical effect of increasing the DNA binding affinity of PBF-2 is to be achieved (Article 5 PCT).
- 4 The application should preferably use a unified nomenclature. It appears that p24, PBF-2 and Whirly are used as synonyms for proteins having the sequences shown in SEQ ID NO: 1, 2, 3 and 4. In the claims (e. g. claims 30 to 32), which have to be clear from the wording of the claim alone, it is absolutely necessary to employ a clear designation of the peptides.